

Reference
Guide

hp StorageWorks

1U Rackmount Tape Enclosure

First Edition (August 2004)

Part Number: A7443-96001

This guide is to be used as step-by-step installation instructions and reference information for operation, troubleshooting, and future upgrades of the HP StorageWorks 1U Rackmount Tape Enclosure.



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Printed in the U.S.A.

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About This Guide

Overview

This reference guide provides information to help you:

- Understand the components and use of the 1U Rackmount Tape Enclosure
- Install or replace tape drives in the enclosure
- Install the tape enclosure in a rack

Intended audience

This book is intended for use by system administrators or technicians who are experienced with the following:

- Installing tape drives
- Installing hardware in a rack
- Setting SCSI IDs

Prerequisites

Before installing or using the tape drives and tape enclosure, make sure that you:

- Have an understanding of SCSI IDs
- Read and understand the safety implications in “Rack stability” on page 8

Related documentation

In addition to this guide, you may also want to refer to the documentation for the tape drive installed in this enclosure.

Document conventions and symbols

Table 1: Document conventions

Convention	Element
Blue text: Figure 1	Cross-reference links
Bold	Menu items, buttons, and key, tab, and box names
<i>Italics</i>	Text emphasis and document titles in body text
Monospace font	User input, commands, code, file and directory names, and system responses (output and messages)
Blue underlined sans serif font text (http://www.hp.com)	Web site addresses



WARNING: Indicates that failure to follow directions in the warning could result in bodily harm or death.



Caution: Indicates that failure to follow directions could result in damage to equipment or data.

Note: Presents commentary, sidelights, or interesting points of information.

Equipment symbols

The following equipment symbols may be found on hardware for which this guide pertains. They have the following meanings:



Any enclosed surface or area of the equipment marked with these symbols indicates the presence of electrical shock hazards. Enclosed area contains no operator serviceable parts.

WARNING: To reduce the risk of personal injury from electrical shock hazards, do not open this enclosure.



Any surface or area of the equipment marked with these symbols indicates the presence of a hot surface or hot component. Contact with this surface could result in injury.

WARNING: To reduce the risk of personal injury from a hot component, allow the surface to cool before touching.



Any product or assembly marked with these symbols indicates that the component exceeds the recommended weight for one individual to handle safely.

WARNING: To reduce the risk of personal injury or damage to the equipment, observe local occupational health and safety requirements and guidelines for manually handling material.

Rack stability

Rack stability protects personnel and equipment.



WARNING: To reduce the risk of personal injury or damage to the equipment, be sure that:

- The leveling jacks are extended to the floor.
- The full weight of the rack rests on the leveling jacks.
- In single rack installations, the stabilizing feet are attached to the rack.
- In multiple rack installations, the racks are coupled.
- Only one rack component is extended at any time. A rack may become unstable if more than one rack component is extended for any reason.

Getting help

If you still have a question after reading this guide, contact an HP authorized service provider or access our web site: <http://www.hp.com>.

HP technical support

Telephone numbers for worldwide technical support are listed on the following HP web site: <http://www.hp.com/support/>. From this web site, select the country of origin.

Note: For continuous quality improvement, calls may be recorded or monitored.

Have the following information available before calling:

- Technical support registration number (if applicable)
- Product serial numbers
- Product model names and numbers
- Applicable error messages
- Operating system type and revision level
- Detailed, specific questions

HP storage web site

The HP web site has the latest information on this product, as well as the latest drivers. Access storage at: <http://www.hp.com/country/us/eng/prodserv/storage.html>. From this web site, select the appropriate product or solution.

HP authorized reseller

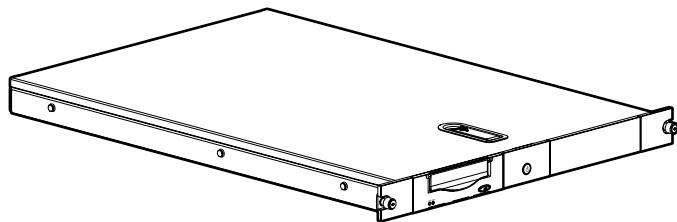
For the name of your nearest HP authorized reseller:

- In the United States, call 1-800-345-1518
- In Canada, call 1-800-263-5868
- Elsewhere, see the HP web site for locations and telephone numbers:
<http://www.hp.com>.

Introduction

1

The HP StorageWorks 1U Rackmount Tape Enclosure is a rack-mountable storage system capable of holding up to two half-height 5.25 inch SCSI tape drives. It is compatible with HP 7000, 9000, & 10000 series, HP Rack System/E, HP AlphaServer, and other standard 19 inch racks.



15100

Figure 1: 1U Rackmount Tape Enclosure

Standard features

The standard features of the 1U tape enclosure are summarized below:

- Supports one or two 5.25 inch half-height tape drives
- Separate SCSI interfaces support drives on one or two LVD/SE Wide SCSI buses
- Remote SCSI ID switches
- Internal SCSI termination
- Front panel power switch with indicator
- 140-watt autoranging internal power supply
- Installation in standard 19 inch racks with round, square, or threaded holes

Note: Daisy-chaining of two or more 1U Rackmount Tape Enclosures is not supported.

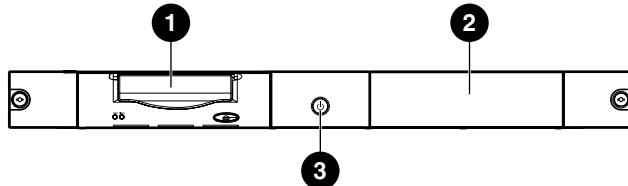
Note: The 1U tape enclosure must be powered up manually after a power interruption. It will not automatically power up.

Supported hardware options

For a list of currently supported SCSI controllers and other hardware options, such as tape drives and media, visit the HP web site at:

<http://h18006.www1.hp.com/storage/tapestorage.html>

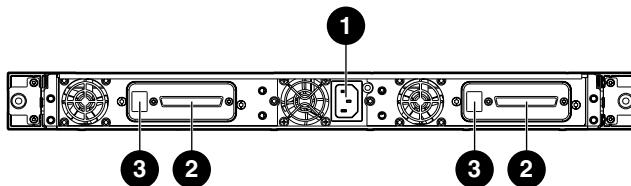
Tape enclosure components



15101

Figure 2: Tape enclosure front panel components

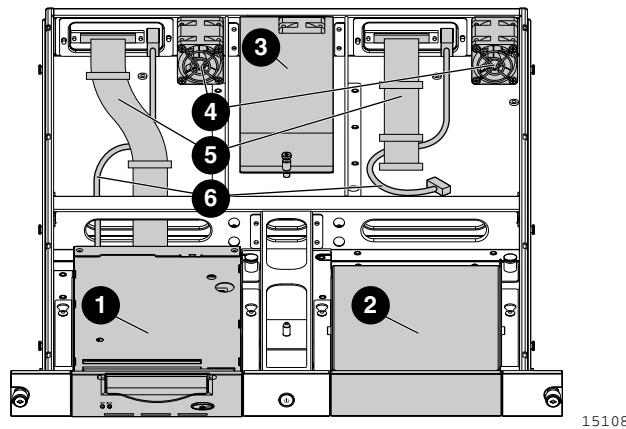
- ① Tape drive
- ② Expansion drive bay
- ③ Power switch/LED



15102

Figure 3: Tape enclosure rear panel components

- ① AC power connector
- ② LVD/SE Wide SCSI connector(s)
- ③ SCSI ID switch(es)



15108

Figure 4: Tape enclosure internal components

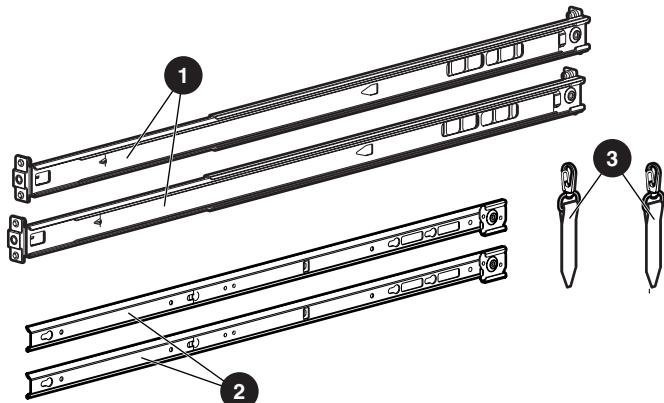
① Tape drive	② Tape drive blank
③ Power supply	④ Fan assemblies (2)
⑤ Internal LVD/SE Wide SCSI cables (2)	⑥ SCSI ID switch cables (2)

Rack Installation

2

Rail mounting kit

The rack rails supplied with the 1U rackmount tape enclosure can be used to install the unit in racks that have round, square, or threaded holes in the vertical mounting bars. The rails will fit racks with 23 - 34 inches (58 - 86 cm) separation between the front and rear vertical mounting bars. The rails are identical and may be mounted on either the left or the right side.



15121a

Figure 5: Rail mounting kit components

- ① Outer rack rails
- ② Inner component rails
- ③ Cable support clips

Tools required

If you are installing the tape enclosure in a rack with unmarked holes in the vertical mounting bars the following items will make the rack installation easier:

- Pencil
- Tape measure

If you are installing the tape enclosure in a rack with threaded holes in the vertical mounting bars you will need the following tool:

- 3/16" (5mm) flat-blade screwdriver

Installing the tape enclosure in a rack



WARNING: To reduce the risk of personal injury or equipment damage, be sure that:

- The rack leveling jacks are extended to the floor
- The full weight of the rack rests on the leveling jacks
- The stabilizing feet are attached to the rack if it is a single rack installation
- The racks are coupled in multiple rack installations
- Only one component is extended at a time. A rack may become unstable if more than one component is extended for any reason.

When installing the enclosure in a rack:

- Start at the bottom of the rack, or at the top of a previously mounted component, and work upward.
- If possible, install the heaviest components at the bottom and lighter ones toward the top of the rack.
- Make sure that the rack-mounting rails are level from front to back.

Before you begin

If you are installing the tape enclosure in a rack with unmarked holes in the vertical mounting bars, identify and mark the correct mounting holes in the rack before you begin rail installation.

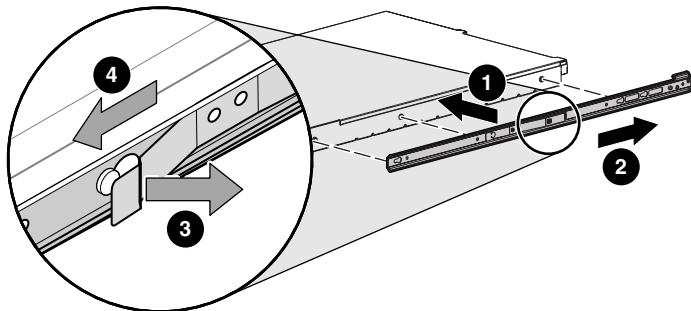


Caution: It is important to install rack components level. To ensure that the 1U tape enclosure is installed correctly it may be necessary to measure the height of the correct mounting holes in the front and rear vertical mounting bars.

Installing the component rails

Component rails are the inner portion of the rack rail system that attached to the tape enclosure.

1. Align the slotted holes on the left and right component rails with the three pins on the sides of the enclosure ①. See Figure 6.
2. Slide the component rails toward the rear of the enclosure ② until they lock into place.



15118

Figure 6: Attaching the component rails to the enclosure

Note: To remove the component rail, pull out the spring-loaded tab ③ on the side of the rail and slide it forward ④.



Caution: If you are returning the 1U Rackmount Tape Enclosure for service, be sure to remove and save the component rails.

Installing the rack rails

Installation procedures vary depending on the rack type. The rails are shipped ready for installation in racks with round or square holes. If the rails are to be installed in racks with 10-32 threaded holes, the mounting pins must first be removed. Refer to one of the following sections for installation instructions for your rack.

- “Installation in racks with round or square holes” on page 18
- “Installation in racks with 10-32 threaded holes” on page 20

Installation in racks with round or square holes

Note: The ends of the rack rails are marked FRONT and REAR for proper orientation.

1. Insert the pins in front mounting plate of the outer rack rails into the previously marked holes in the front vertical mounting bars of the rack. See Figure 8. The rack rails will lock securely into place.

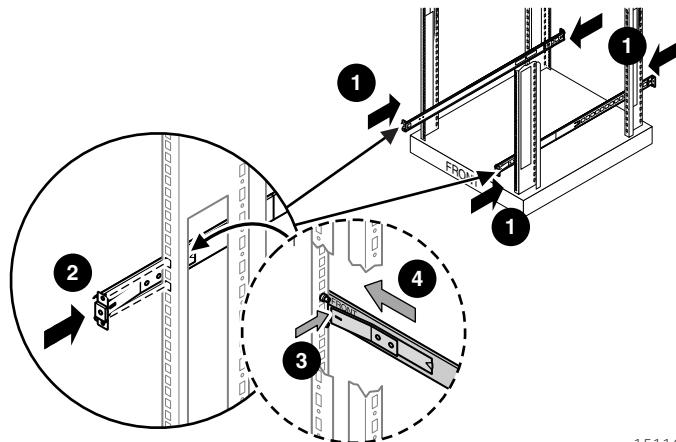


Figure 7: Installing the rack rails in front of rack

Note: To remove the rail for repositioning, push the spring-loaded tab **③** on the outside of the rack rail and slide it forward **④**.

2. Extend the rack rails past the rear vertical mounting bar and insert the pins in the mounting bracket into the previously marked holes in the rack. See Figure 8. The rack rails will lock securely into place when the end of the rails are pushed forward.

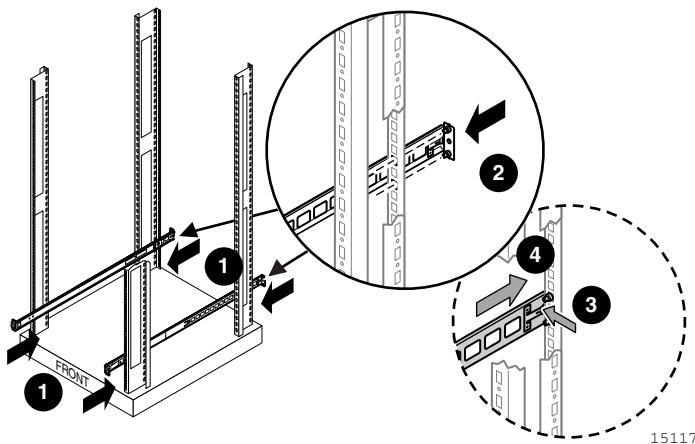


Figure 8: Installing the rack rails in rear of rack

Note: To remove the rail for repositioning, push the spring-loaded tab **③** on the outside of the rack rail and slide rearward **④**.

Rail installation in a rack is complete. Continue with “Completing the installation” on page 22.

Installation in racks with 10-32 threaded holes

For installation in racks with 10-32 threaded holes in the vertical mounting bars the pins supplied on the rails must be removed. The rails will be attached with user-supplied 10-32 x.375 screws.

1. Remove the pins and threaded plates from both ends of each outer rack rail. See Figure 9. These pieces will not be used.

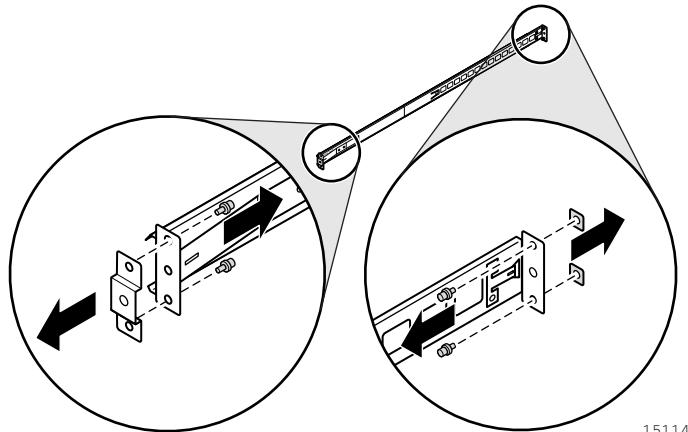
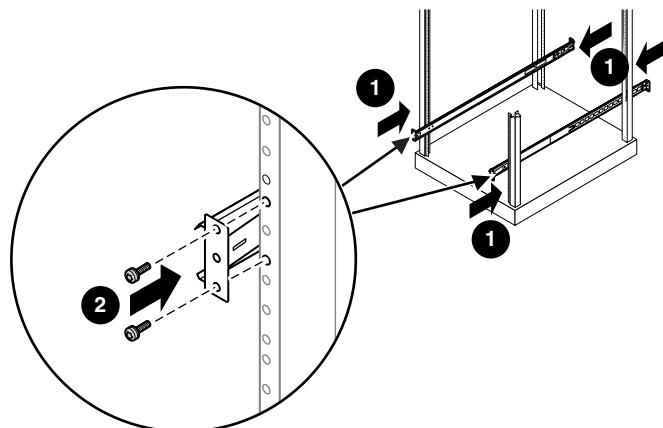


Figure 9: Remove the pins and mounting hardware from the rack rail

Note: The ends of the rack rails are marked FRONT and REAR for proper orientation.

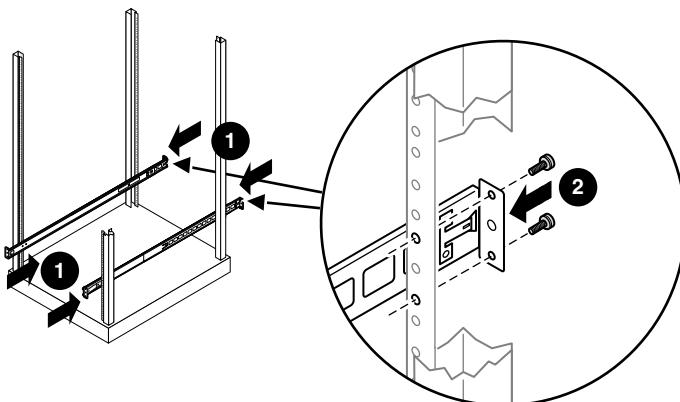
2. Attach the front mounting plate of each outer rail to the rack using four 10-32 screws in the previously marked holes in the front vertical mounting bars of the rack. See Figure 10.



15119

Figure 10: Installing the rack rails in front of rack

3. Extend the rack rails past the rear vertical mounting bars and attach the back mounting plate of each outer rail to the rack using four 10-32 screws in the previously marked holes. See Figure 11.



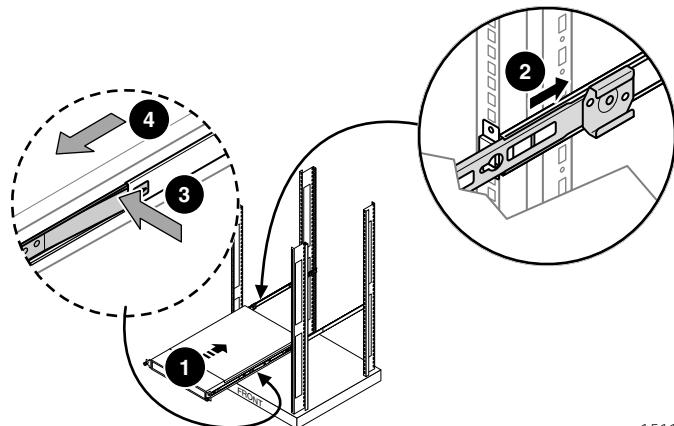
15120

Figure 11: Installing the rack rails in rear of rack

Rail installation is complete. Continue with Completing the installation.

Completing the installation

1. Extend the stabilizing feet if provided on your rack.
2. Extend the left and right rack rails from the front of the rack.
3. Align the rear of the component rails on the tape enclosure with the front ends of the rack rails, then slide the unit fully into the rack. See Figure 12.



15111

Figure 12: Slide 1U tape enclosure into rack



Caution: Be sure to keep the enclosure parallel to the floor when sliding the component rails into the rack rails. Tilting the enclosure up or down could damage the rails.

Note: To remove the enclosure from the rack, disconnect the cables from the back of the unit. Press the latches on each side ③ and pull the enclosure from the rack ④. See Figure 12 for the location of the latches.

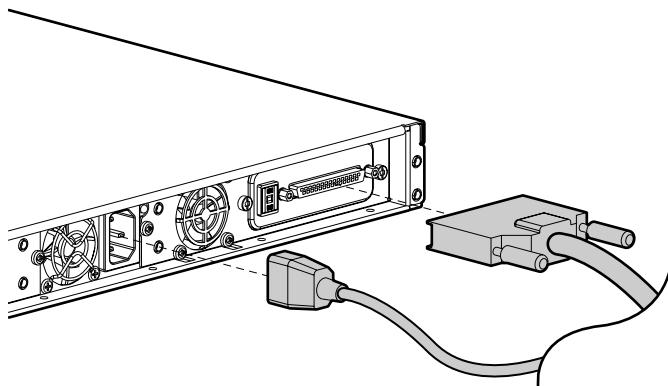
4. Tighten the front panel thumbscrews.
5. If used, retract the stabilizing feet of the rack.

Note: Refer to "Internal cable configurations" on page 33 for details on configuring one or two SCSI buses in the enclosure.

6. Plug the external SCSI cable from the SCSI controller to the appropriate connector(s) on the rear panel of the enclosure. See Figure 13.

Note: Daisy-chaining of two or more 1U Rackmount Tape Enclosures is not supported.

7. Plug the AC power cord into the power cord connector, then into a grounded outlet. See Figure 13.



15129

Figure 13: Connecting the power and SCSI cables to the tape enclosure

8. Install the cable support clip(s) at the back of the rack rail(s) on one or both sides of the enclosure. See Figure 14.

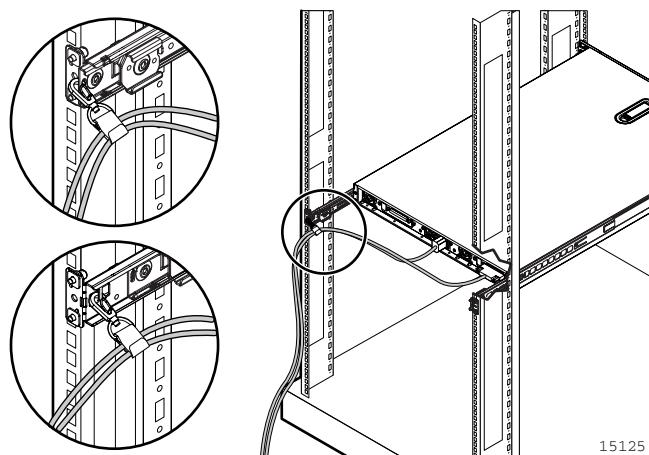


Figure 14: Install the cable support clips

9. Turn on the power to the tape enclosure with the front panel power button.

3

Tape Drive Installation and Replacement

This chapter describes installation or replacement of a tape drive into the HP StorageWorks 1U Rackmount Tape Enclosure. This chapter covers the following topics:

- Setting SCSI IDs, page 25
- Tools required, page 26
- Installing a second tape drive, page 26
- Internal cable configurations, page 33
- Replacing a tape drive, page 35
- Troubleshooting, page 42

Setting SCSI IDs

The default SCSI ID for each tape drive depends on the cable configuration used in the tape enclosure. If there is one tape drive per SCSI cable, the default is 0. For two tape drives per SCSI cable, the default for the left tape drive is 0 and the default for the right tape drive is 1.

Note: If you are replacing a drive, the new drive may be pre-configured with a different SCSI ID using jumpers on the back of the drive. These jumpers must be removed or repositioned to change the SCSI ID to the requirements of your system.

Before setting the SCSI ID, be sure the SCSI ID complies with the following:

- Each device on the same SCSI bus must have a unique SCSI ID.
- If the SCSI IDs on the tape drives must be changed, do not duplicate SCSI IDs.
- Do not use SCSI ID 7. It is reserved for the controller.

The SCSI IDs for the tape drives in the 1U rackmount tape enclosure can be set in one of two ways:

1. The enclosure has two remote SCSI ID switches, one for each drive, on the rear panel. These can be connected to the internal tape drives in place of the jumpers normally used. To set the SCSI ID select it with the up/down buttons on the switch for each drive.
2. If the SCSI ID switches on the rear panel are not used, refer to your tape drive manual to set or change the SCSI ID using jumpers on the back of a tape drive.

Tools required

The following tools may be required to install a tape drive in the 1U tape enclosure:

- 3/16" (5mm) flat-blade screwdriver or T-15 Torx driver

Installing a second tape drive



Caution: To avoid damaging the equipment due to electrostatic discharge, be sure to review and practice the procedures in Appendix B before handling the tape drives.

To install a tape drive in the 1U tape enclosure:

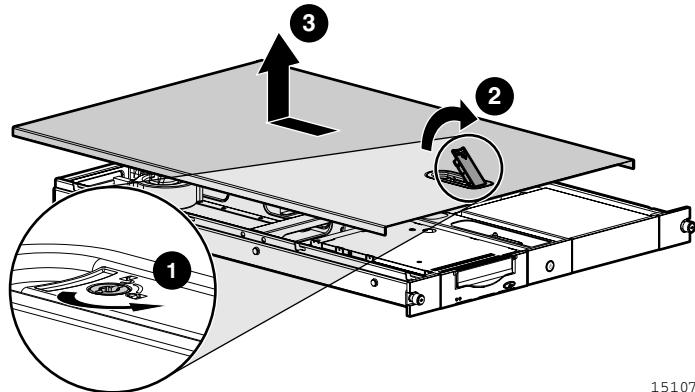
1. Turn off the power to the tape enclosure with the front panel power button.
2. Loosen any cable restraints at the rear of the rack that may prevent the enclosure from being extended in the rack.



Caution: To avoid damage to connectors attached to the enclosure, be sure that cables are free to move in the rack as the unit is extended.

3. Extend stabilizing feet if provided on your rack.
4. Loosen the front panel thumbscrews and slide the enclosure forward in the rack until it latches. It is not necessary to remove the enclosure from the rack.

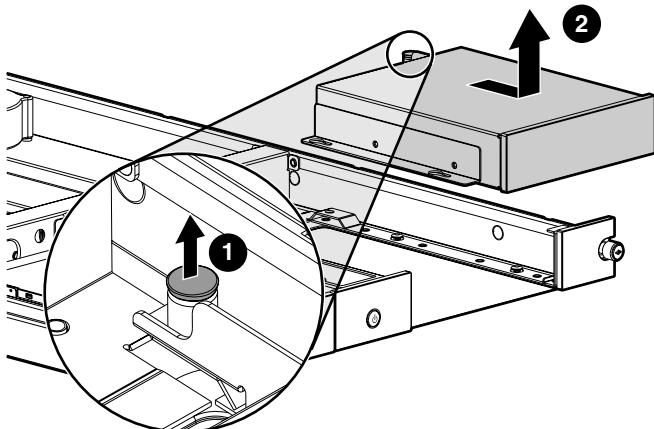
5. Remove the top access panel by turning the latch lock **1** counterclockwise, lifting the latch **2**, and sliding the panel back **3**. See Figure 15.



15107

Figure 15: Removing the top access panel

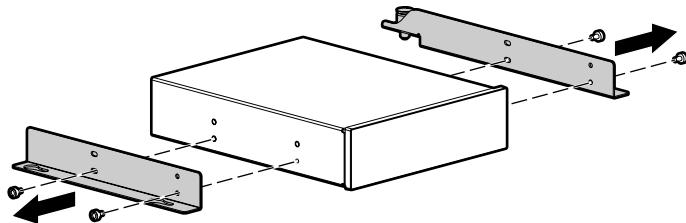
6. Remove the tape drive blank by pulling up the spring-loaded button **1** on the rear of the right mounting rail. Slide the assembly forward and lift it from the enclosure **2**. See Figure 16.



15104

Figure 16: Removing the tape drive blank

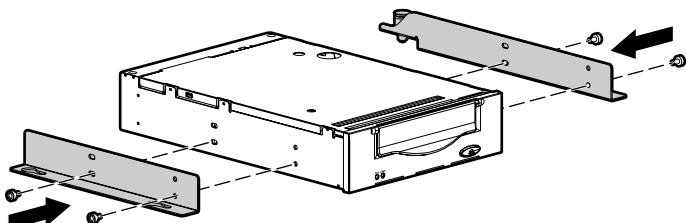
7. Remove the left and right mounting brackets from the tape drive blank by removing two screws from each side. See Figure 17. Save the screws and mounting brackets for use in the next step.



15110

Figure 17: Removing the mounting brackets

8. Install the left and right mounting brackets to the sides of the tape drive using the screws removed in step 7. See Figure 18.



15127

Figure 18: Installing the mounting brackets

9. If you are not using the remote SCSI ID switch on the tape enclosure, set the SCSI ID with jumpers on the back of the new drive. Refer to the documentation for your tape drive for information about setting the SCSI ID.
10. If you are using the remote SCSI ID switch on the tape enclosure, remove all the jumpers from the back of the new drive. The switch will connect to the pins normally programmed by the jumpers.



Caution: To prevent possible damage to the tape enclosure or to cause the rack to become unstable, you must provide support under the enclosure when installing a drive.

11. Position the keyhole slots in the left and right mounting brackets over the mounting posts attached to the tape enclosure. While supporting the enclosure from the bottom, press down ① so that the drive is flat against the bottom of the tape enclosure. Slide the drive ② toward the back of the enclosure until the spring-loaded pin snaps into place ③, locking the drive into the enclosure. See Figure 19.

Note: Make sure that all of the posts are engaged into their respective slots in the drive mounting brackets.

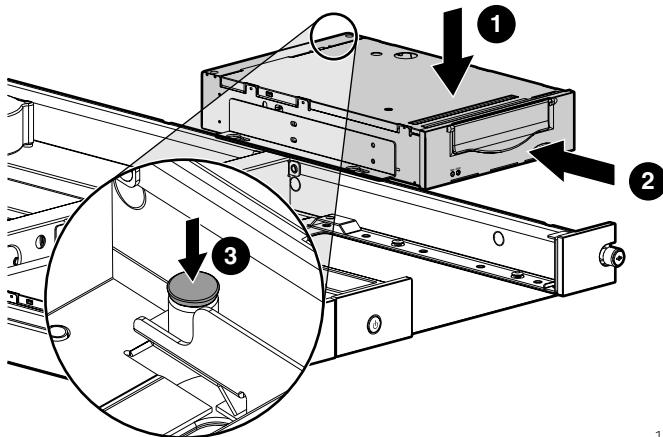
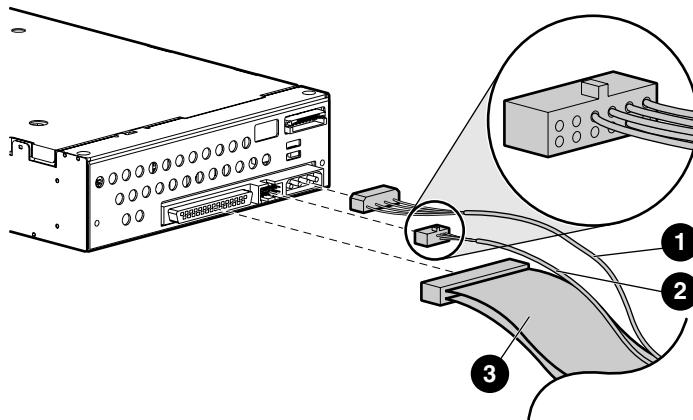


Figure 19: Installing the tape drive



Caution: To prevent possible data errors, when there is only one drive on a SCSI bus that drive must be connected to the SCSI port closest to the terminator.

12. Attach the power cable **1**, SCSI ID cable **2** (if used), and SCSI data cable **3** to the back of the drive. Refer to Figure 20 and “Internal cable configurations” on page 33 to identify the SCSI cable for your configuration.



15109

Figure 20: Attach cables to the drive

Note: Fold excess SCSI cable length and secure with the clips provided in the tape enclosure.



WARNING: To avoid possible injury from rotating fan blades do not attempt to operate the tape enclosure with the top cover removed.



Caution: When reinstalling the top cover, be sure the latch is fully engaged and is flush with the cover to avoid interference with devices installed above the tape enclosure.

13. Replace the top cover by placing it on top of the enclosure **1**, engaging all the pins into slots in both sides of the enclosure as well as the central pin in the latch. Push the latch down flush with the top **2** and turn the lock clockwise **3** to prevent accidental opening. See Figure 21.

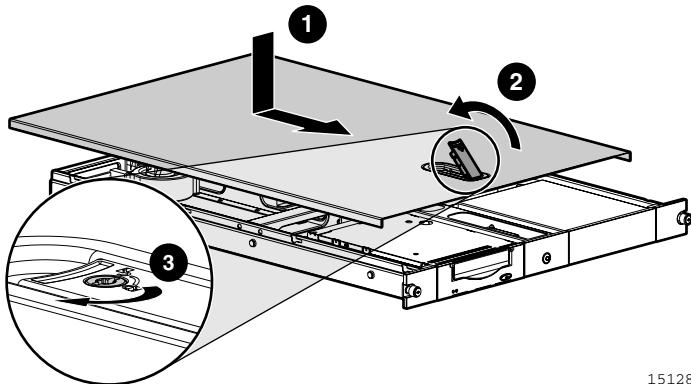


Figure 21: Replacing the top

14. Slide the enclosure fully into the rack and tighten the two front panel thumbscrews.
15. Set the SCSI ID if you are using the remote SCSI ID switch on the back of the enclosure. Refer to “Setting SCSI IDs” on page 25.
16. If your configuration requires an additional SCSI cable, connect it between the second SCSI connector on the back of the enclosure and the SCSI controller.

17. If used reattach the cable bundle to the cable support clips at the rear of the rack. See Figure 22.

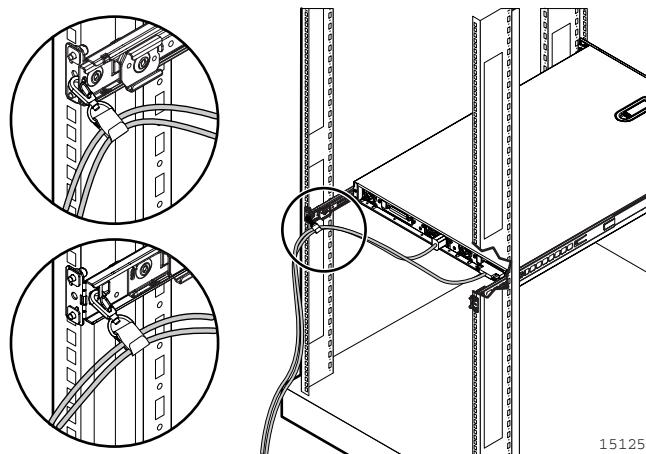


Figure 22: Cable support mechanism

18. Retract the stabilizing feet if provided on the rack.
19. Turn on the power to the tape enclosure with the front panel power button.

Tape drive installation is complete.

Internal cable configurations

The 1U Tape Enclosure supports operation of two tape drives on either 1 or 2 SCSI buses. Two internal 2-port SCSI cables are installed in the enclosure, so completing the drive installations just a matter of connecting the correct SCSI port according to your configuration.

Two drives on one SCSI bus

Use the configuration shown in Figure 23 when connecting both tape drives to the same SCSI bus.

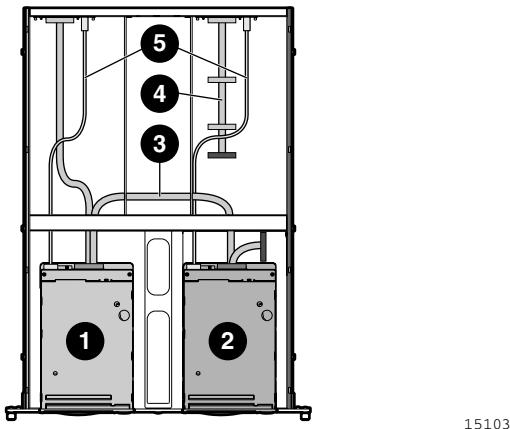


Figure 23: Two drives on one SCSI bus

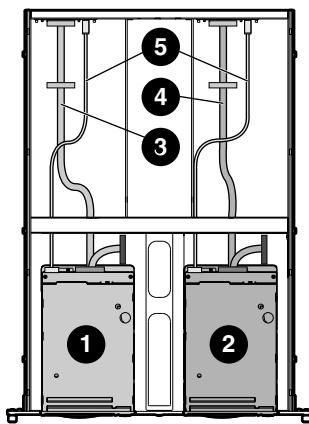
- ① Tape drive 1
- ② Tape drive 2
- ③ SCSI bus 1 cable; SCSI connector nearest terminator is used for drive 2, center connector is used for drive 1
- ④ SCSI bus 2 cable (not used)
- ⑤ SCSI ID cables, one for each tape drive

Note: When adding a second tape drive for configurations using a single SCSI bus unplug the SCSI cable from drive 1, pass the end of the cable through internal chassis openings, and plug the end port into drive 2. Then plug the middle port into drive 1. The SCSI terminator is at the end of the cable and should be behind drive 2.

Note: Each SCSI device on the same SCSI bus must have a unique SCSI ID. Be sure that the SCSI ID is different for each drive and that neither is set to SCSI ID 7

Two drives on two SCSI buses

Use the configuration shown in Figure 24 when connecting each drive to separate SCSI buses.



15105

Figure 24: Two drives on two SCSI buses

- ① Tape drive 1
- ② Tape drive 2
- ③ SCSI bus 1 cable, SCSI connector nearest terminator is used for drive 1
- ④ SCSI bus 2 cable, SCSI connector nearest terminator is used for drive 2
- ⑤ SCSI ID cables, one for each tape drive



Caution: To prevent possible data errors, when there is only one drive on a SCSI bus that drive must be connected to the SCSI port closest to the terminator.

Replacing a tape drive



Caution: If you are returning a failed tape drive, DO NOT return the drive mounting brackets.



Caution: To avoid damaging the equipment due to electrostatic discharge, be sure to review and practice the procedures in Appendix B before handling the tape drives.

To replace a tape drive in the 1U tape enclosure:

1. Turn off the power to the tape enclosure with the front panel power button.



Caution: To avoid damage to connectors attached to the enclosure, be sure that cables are free to move in the rack as the unit is extended.

2. Loosen any cable restraints at the rear of the rack that may prevent the enclosure from being extended in the rack.
3. Extend the stabilizing feet if provided on your rack.
4. Loosen the front panel thumbscrews and slide the tape enclosure forward in the rack. It is not necessary to remove the enclosure from the rack.

5. Remove the top panel by turning the latch lock **1** counter-clockwise, lifting the latch **2**, sliding the panel back **3**, and lifting it from the enclosure. See Figure 25.

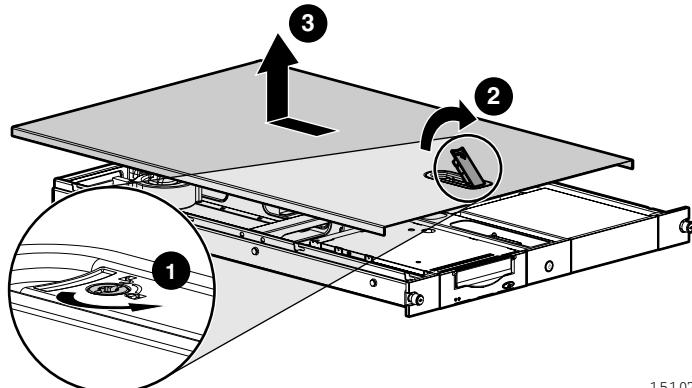
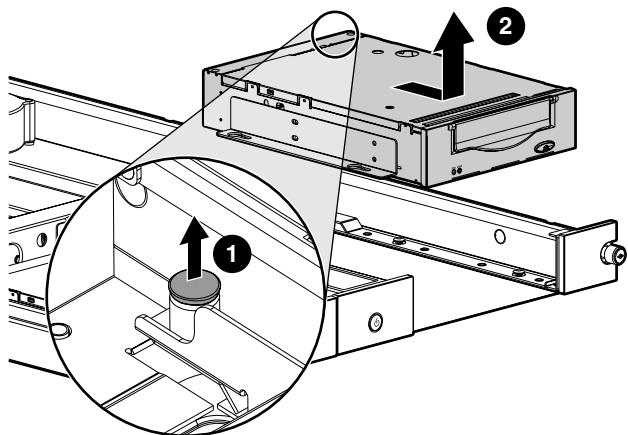


Figure 25: Removing the top panel



Caution: To avoid the possibility of damaging the tape drive, do not pull the drive using the front bezel. The drive may be safely pulled forward using the rear of the drive.

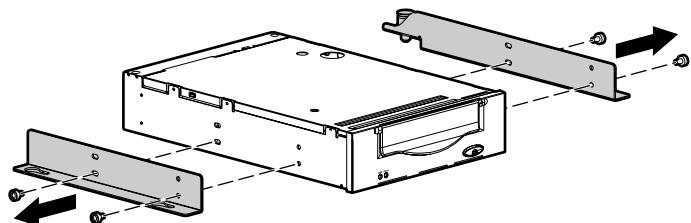
6. Remove the tape drive by pulling up the spring-loaded button **1** on the rear of the right mounting rail. Slide the assembly forward and lift from the enclosure **2**. See Figure 26.



15112

Figure 26: Removing the tape drive

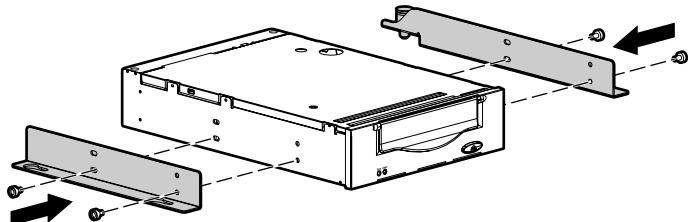
7. Disconnect the SCSI data, SCSI ID (if used), and power cables from the back of the drive.
8. Remove the left and right mounting brackets from the tape drive by removing two screws from each side. See Figure 27. Save the screws and mounting brackets for use in the next step.



15113

Figure 27: Removing the mounting brackets from the drive

9. Install the left and right mounting brackets to the sides of the new tape drive using the screws removed in step 8. See Figure 28.



15127

Figure 28: Installing the drive mounting brackets

10. If you are not using the remote SCSI ID switch on the tape enclosure, set the SCSI ID with jumpers on the back of the new drive. Refer to the documentation for your tape drive for information about setting the SCSI ID.
11. If you are using the remote SCSI ID switch on the tape enclosure, remove all the jumpers from the back of the new drive. The switch will connect to the pins normally programmed by the jumpers.



Caution: To prevent possible damage to the tape enclosure or to cause the rack to become unstable, you must provide support under the enclosure when installing a drive.

12. Position the keyhole slots in the left and right mounting brackets over the mounting posts attached to the enclosure. While supporting the enclosure from the bottom press down ① so that the drive is flat against the bottom of the enclosure. See Figure 29. Slide the drive ② toward the back of the enclosure until the spring-loaded pin snaps into place ③, locking the drive into the enclosure.

Note: Make sure that all of the posts are engaged into their respective slots in the drive mounting rails.

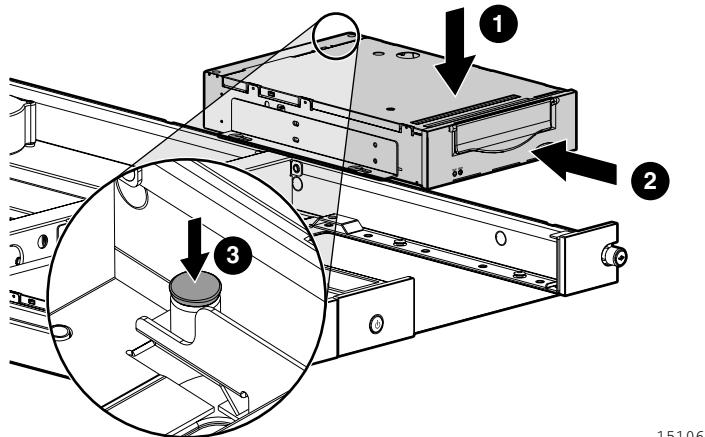


Figure 29: Installing the tape drive

13. Attach the power cable ①, SCSI data cable ③, and SCSI ID cable ② (if used) removed in step 7. See Figure 30.

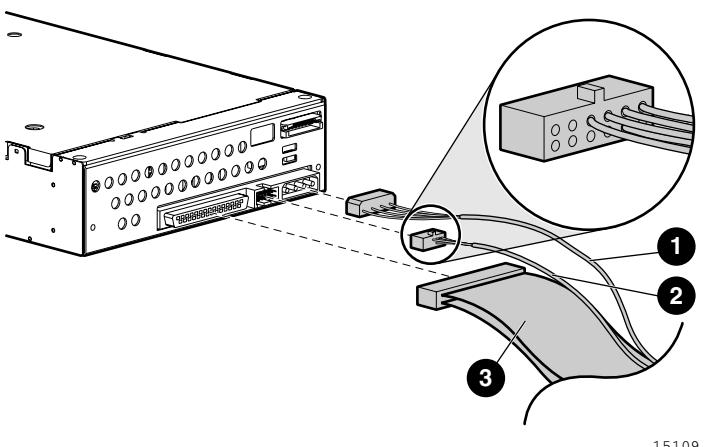


Figure 30: Attach cables to the drive



WARNING: To avoid injury from rotating fan blades, do not attempt to operate the tape enclosure with the top removed.



Caution: When reinstalling the top cover, be sure the latch is fully engaged and is flush with the cover to avoid interference with devices installed above the 1U tape enclosure in the rack.

14. Replace the top cover by placing it on top of the enclosure ①, engaging all the pins into slots in both sides of the enclosure as well as the central pin in the latch. Push the latch down flush with the top ② and turn the lock clockwise ③ to prevent accidental opening. See Figure 31

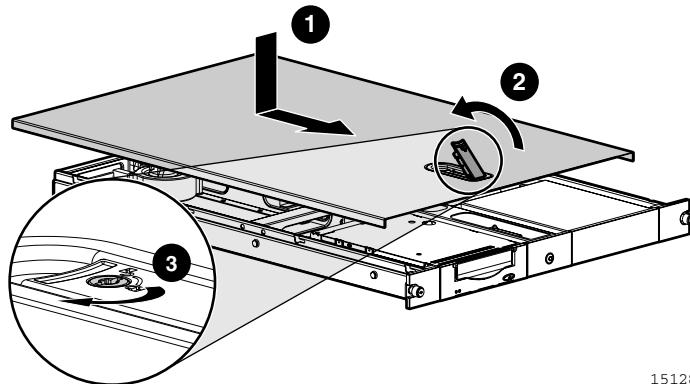


Figure 31: Replacing the top cover

15. Slide the enclosure fully into the rack and tighten the two front panel thumbscrews.
16. If used reattach the cable bundle to the cable support assembly at the rear of the rack. See Figure 32.

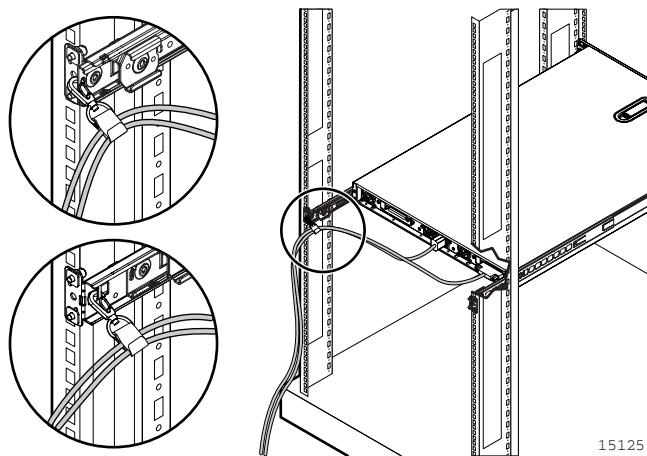


Figure 32: Cable support mechanism

17. Retract the stabilizing feet if used on your rack.
18. Turn on the power to the tape enclosure with the front panel power button.
Tape drive replacement is complete.

Troubleshooting

Use the following information to help solve problems that may develop while installing or replacing a tape drive.

Table 2: Tape drive installation troubleshooting

Problem	Cause	Solution
Random data errors detected on tape drive	For installations with one tape drive on a SCSI bus, that drive may not be connected to SCSI port nearest the terminator.	Verify that tape drive is connected to the SCSI port nearest the terminator at the end of the internal SCSI cable. Refer to Two drives on two SCSI buses, page 34.
SCSI ID conflict detected	For installations with two tape drives on one SCSI bus, both drives may be set to the same SCSI ID.	Verify: <ul style="list-style-type: none">■ each tape drives have unique SCSI ID settings, refer to Setting SCSI IDs, page 25■ both tape drives have SCSI ID cables installed correctly, refer to Figure 30.
Enclosure won't slide into rack	Top cover not fully engaged Rail alignment problems	Make sure that all pins in the cover are engaged in their respective slots in the sides of the unit. Make sure the latch is fully closed and is flush with the top of the cover. Make sure the rails are installed in the corresponding holes in the front and back vertical mounting bars in the rack. It is important that the unit be horizontal front-to-back and side-to-side.

Regulatory Compliance Notices



A

Federal Communications Commission Notice

Part 15 of the Federal Communications Commission (FCC) Rules and Regulations has established Radio Frequency (RF) emission limits to provide an interference-free radio frequency spectrum. Many electronic devices, including computers, generate RF energy incidental to their intended function and are, therefore, covered by these rules. These rules place computers and related peripheral devices into two classes, A and B, depending upon their intended installation. Class A devices are those that may reasonably be expected to be installed in a business or commercial environment. Class B devices are those that may reasonably be expected to be installed in a residential environment (for example, personal computers). The FCC requires devices in both classes to bear a label indicating the interference potential of the device as well as additional operating instructions for the user.

The rating label on the device shows which class (A or B) the equipment falls into. Class B devices have an FCC logo or FCC ID on the label. Class A devices do not have an FCC logo or FCC ID on the label. Once the class of the device is determined, refer to the following corresponding statement.

Class A Equipment

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at personal expense.

Class B Equipment

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio or television technician for help.

Modifications

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Hewlett-Packard Company may void the user's authority to operate the equipment.

Cables

Connections to this device must be made with shielded cables with metallic RFI/EMI connector hoods in order to maintain compliance with FCC Rules and Regulations.

Declaration of Conformity for products marked with the FCC logo - United States only

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For questions regarding your product, contact:

Hewlett-Packard Company
P. O. Box 692000, Mail Stop 530113
Houston, Texas 77269-2000

Or, call

1-800- 652-6672

For questions regarding this FCC declaration, contact:

Hewlett-Packard Company
P. O. Box 692000, Mail Stop 510101
Houston, Texas 77269-2000

Or, call

(281) 514-3333

To identify this product, refer to the part, series, or model number found on the product.

Canadian notice (Avis Canadien)

Class A equipment

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Class B equipment

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

European Union notice



Products bearing the CE marking comply with the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community and if this product has telecommunication functionality, the R&TTE Directive (1999/5/EC).

Compliance with these directives implies conformity to the following European Norms (in parentheses are the equivalent international standards and regulations):

- EN 55022 (CISPR 22) - Electromagnetic Interference
- EN55024 (IEC61000-4-2, 3, 4, 5, 6, 8, 11) - Electromagnetic Immunity
- EN61000-3-2 (IEC61000-3-2) - Power Line Harmonics
- EN61000-3-3 (IEC61000-3-3) - Power Line Flicker
- EN 60950 (IEC 60950) - Product Safety

BSMI notice

警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Japanese notice

ご使用になっている装置にVCCIマークが付いていましたら、次の説明文をお読み下さい。

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。

取扱説明書に従って正しい取り扱いをして下さい。

VCCIマークが付いていない場合には、次の点にご注意下さい。

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

Japanese power cord notice

製品には、同梱された電源コードをお使い下さい。
同梱された電源コードは、他の製品では使用出来ません。

Korean notices

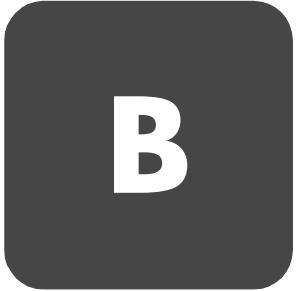
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주거지역에서는 물론 모든지역에서 사용할 수 있습니다.

Electrostatic Discharge



B

To prevent damage to the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

To prevent electrostatic damage, observe the following precautions:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly.

Grounding methods

There are several methods for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

- Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm \pm 10 percent resistance in the ground cords. To provide proper grounding, wear the strap snug against the skin.
- Use heel straps, toe straps, or boot straps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
- Use conductive field service tools.
- Use a portable field service kit with a folding static-dissipating work mat.

If you do not have any of the suggested equipment for proper grounding, have an authorized reseller install the part.

Note: For more information on static electricity, or for assistance with product installation, contact your authorized reseller.

Specifications



Table 3: HP StorageWorks 1U Rackmount Tape Enclosure

Parameter	English	Metric
Dimensions		
Height	1.75 in	4.44 cm
Depth	25.25 in	64.1 cm
Width	19.0 in	48.3 cm
Weight (1 drive installed)	20 lb	9.07 kg
Input power requirements		
Rated input voltage	90 to 264 VAC	90 to 264 VAC
Rated input current	2.4 A	2.4 A
Rated input frequency	47 - 63 Hz	47 - 63 Hz
Input power (max)	140 W*	140 W*
Heat Dissipation (max)	478 BTU/hr*	478 BTU/hr*
Temperature range		
Operating	41° to 104° F	5° to 40° C
Non-operating	-40° to 158° F	-40° to 70° C
Relative humidity		
Operating (non-condensing)	20% to 80%	20% to 80%
Non-operating	5% to 95%	5% to 95%
Wet bulb temperature (max)	79° F	26° C
Altitude (max)		
Operating	0 to 15,000 ft	0 to 4600 m
Non-operating	0 to 50,000 ft	0 to 15200 m
* Input power and Heat dissipation specifications are maximum values and apply to worst-case conditions at full rated power supply load. The power/heat dissipation for your installation will vary depending on the equipment configuration.		

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